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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,680	11/15/2001	Hideo Hoshuyama	111118	7530

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EXAMINER	
LAROSE, COLIN M	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 08/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/987,680	HOSHUYAMA, HIDEO	
	Examiner	Art Unit	
	Colin M. LaRose	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 26 May 2006 has been entered.

Response to Amendments and Arguments

2. By way of amendment, Applicant has amended claim 15 to denote that the apparatus is an "electronic still camera." This change is sufficient to overcome the previous combination of Takashima and Girod, however a new ground of rejection for this claim appears below.

Claims 18 and 19 were amended to denote that the claimed method and program product are "for an electronic still camera," rather than "for an image capturing device." This limitation is considered an intended use for the claimed invention and is not given patentable weight for the reasons below. Therefore, the previous rejections of claims 18 and 19 have been maintained.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,721,000 by Lin et al. ("Lin") in view of U.S. Patent 6,504,551 by Takashima et al. ("Takashima").

Regarding claim 15, Lin discloses an electronic still camera (figure 1) comprising:

an image-capturing device (sensor 12 + amp 14 + A/D converter 16) that captures an image of a subject and outputs signals under first color coordinates comprising a plurality of color components (signals from sensor 12 are digitized 16 to produce RGB signals);

an image processing device (processor 10) that performs image processing on the signals output from the image-capturing device; and

the image processing device including:

a color coordinate conversion unit that converts the signals output from the image-capturing device into signals under second color coordinates comprising a luminance component and color difference components (figure 1 shows processor converts RGB into YUV), and

a color difference signal correction unit that receives signals corresponding to the color difference components, and outputs corrected signals corresponding to the color difference components (see e.g. figures 2 and 3, where the color difference signals U and V are corrected).

Thus, Lin teaches that the processor 10 is operative to perform color correction/enhancement on the color difference components U and V, as shown in figures 2 and 3.

However, Lin is silent to the corrected signals being generated using a "two dimensional look-up table," as claimed. Also, Lin is silent to outputting a "correction amount for a signal

corresponding to the luminance component by using a two dimensional look-up table," as claimed.

Takashima discloses an apparatus (figure 1) for correcting the luminance and color-difference values of image data. In particular, Takashima teaches correcting/enhancing image signals by using:

a color coordinate conversion device (second matrix circuit 44) which converts first color coordinates of a color signal into signals under second color coordinates comprising a luminance component and color difference components; and

a color difference signal correction unit (secondary processor 38, shown in more detail in figure 12) that receives signals corresponding to the color difference components (i.e. it receives the U and V color components), and outputs corrected signals corresponding to the color difference components and a correction amount for a signal corresponding to the luminance component by using a look-up table based upon the received signals corresponding to the color difference signals (i.e. the secondary processor 38 uses the look-up table 52 to output corrected color difference components (U_d and V_d) and a correction amount for the luminance component ($\Sigma\Delta Y$)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lin by Takashima to achieve the claimed invention since Lin discloses an electronic still camera that can operate in "video" or "still" mode (column 1/18-19) and that performs color enhancement on color image signals captured by the camera (see element 10, figure 1), and Takashima shows that it is both advantageous and conventional to enhance color video signals

by "outputting corrected signals corresponding to the color difference components and a correction amount for a signal corresponding to the luminance component by using a look-up table based upon the received signals corresponding to the color difference signals." Specifically, Takashima teaches that other conventional color correction devices "cannot be executed with [a] high degree of freedom," and as a result, Takashima's method employs a lookup table that can be varied by an operator so as to enable a high degree of freedom in correcting an image signal to achieve a desired color (column 1/42-58).

Although Takashima's image signal correction methods pertain to video signals, they are applicable to the signals produced by Lin's digital camera, which Lin teaches can conventionally produce still or video image (Lin, column 1/18-19).

In addition, Takashima does not expressly disclose that the look-up table 52 in figure 12 is a "two dimensional" look-up table. Takashima's table 52 receives a value θ_s, which corresponds to an angle, and derives a set of outputs based on θ_s and entries in the look-up table. Although not expressly stated by Takashima, LUT 52 can reasonably be considered a 2-D look-up table. Since the table outputs three values, it must have three entries for every possible input value θ_s. Therefore, the size of the LUT is 3xN, where N is the number of possible input values.

Alternatively, the LUT can be considered 2-D, or at least functionally equivalent to a 2-D look-up table, since its input value θ_s is directly derived from the two color components U_s and V_s. That is, the coordinate transform circuit 51 receives color values U_s and V_s and transforms them into θ_s prior to being input into the LUT. As such, the input to the LUT is essentially "two-dimensional" data directly pertaining to the color components U_s and V_s, and in view of this fact,

those skilled in the art would have recognized that the LUT 52 is at least functionally equivalent to a "two dimensional" look-up table.

Regarding claim 16, Takashima discloses the color coordinate conversion device converts color coordinates of a color signal by matrix calculation (i.e. second matrix circuit 44 performs a matrix calculation)

Regarding claim 17, Takashima discloses a luminance signal correction unit (54Y, figure 12) that corrects the signal corresponding to the luminance component with the correction amount and outputs a corrected signal corresponding to the luminance component.

Takashima does not expressly disclose a compression unit to compress the corrected signal or a recording unit to record a compressed signal. However, at the time the invention was made, it was extremely conventional in the art of image processing to, after correcting an image, to compress it for storage. Such limitations would have been readily obvious to those skilled in the art. Official notice taken.

5. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,504,551 by Takashima et al. ("Takashima") in view of U.S. Patent 5,565,931 by Girod.

Regarding claims 18 and 19, Takashima discloses an image processing device/method/computer program (figure 2), comprising:

a color coordinate conversion device (second matrix circuit 44) which converts first color coordinates of a color signal into signals under second color coordinates comprising a luminance component and color difference components; and

a color difference signal correction unit (secondary processor 38, shown in more details in figure 12) that receives signals corresponding to the color difference components (i.e. it receives the U and V color components), and outputs corrected signals corresponding to the color difference components and a correction amount for a signal corresponding to the luminance component by using a look-up table based upon the received signals corresponding to the color difference signals (i.e. the secondary processor 38 uses the look-up table 52 to output corrected color difference components (U_d and V_d) and a correction amount for the luminance component ($\Sigma\Delta Y$)).

Takashima discloses that an image with signals under first coordinates is obtained from a "source" (see figure 1), however, Takashima does not disclose that the image is captured from an image-capturing device that outputs image signals, as claimed.

Girod discloses a color image correction system that is very similar to that of Takashima in that look-up table(s) are employed to correct color difference signals (see e.g. figure 4). Girod discloses an image being captured by a camera (22) and then converted into a luminance-chrominance format via a matrix conversion (66).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Takashima by Girod to capture the image with an image-capturing device (i.e. a camera), as claimed, since Takashima discloses obtaining the color image from an image source, and Girod shows that a camera is a conventional source of color images.

In addition, Takashima does not expressly disclose that the look-up table 52 in figure 12 is a "two dimensional" look-up table. Takashima's table 52 receives a value θ_s, which corresponds to an angle, and derives a set of outputs based on θ_s and entries in the look-up table.

Although not expressly stated by Takashima, LUT 52 can reasonably be considered a 2-D look-up table. Since the table outputs three values, it must have three entries for every possible input value θ_s. Therefore, the size of the LUT is 3xN, where N is the number of possible input values.

Alternatively, the LUT can be considered 2-D, or at least functionally equivalent to a 2-D look-up table, since its input value θ_s is directly derived from the two color components U_s and V_s. That is, the coordinate transform circuit 51 receives color values U_s and V_s and transforms them into θ_s prior to being input into the LUT. As such, the input to the LUT is essentially "two-dimensional" data directly pertaining to the color components U_s and V_s, and in view of this fact, those skilled in the art would have recognized that the LUT 52 is at least functionally equivalent to a "two dimensional" look-up table.

Claims 18 and 19 have been amended to recite an intended use for the image processing method of claim 18 and the computer-readable computer program product: "for an electronic still camera." Such a limitation is not given patentable weight because it merely recites an intended use for the invention and is not related to the body of the claims, which specify the use of an "image-capturing device" rather than an "electronic still camera."

"If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction." MPEP § 2111.02(II).

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,721,000 by Lin et al. ("Lin") in view of U.S. Patent 6,504,551 by Takashima et al. ("Takashima"), as applied to claim 15, and further in view of U.S. Patent 5,974,173 by Kimura.

Regarding claim 20, Takashima teaches utilizing a lookup table, as claimed. However, Takashima does not disclose that linear interpolation is performed to generate intermediate table data when the lookup table does not contain data corresponding to the received signals, as claimed.

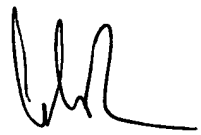
Kimura discloses a method for color correction. In particular, Kimura teaches that in conventional color correction systems, lookup tables (LUTs) are commonly employed to convert color signals. Kimura further teaches that it may not be practical to store data in the LUT for every possible color gradation level because doing so requires a very large memory capacity. Therefore, the conventional practice is to store data in the LUT only for representative points of the image data. Then, when image data that deviate from the representative points are input (i.e. points that are not contained in the LUT), linear interpolation is performed (on the basis of the nearest representative points in the LUT) in order to generate the correction data. See column 2/14-20.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lin and Takashima by Kimura to achieve the claimed invention since Kimura teaches that conventionally, an LUT employed in a color correction environment contains less than all of the possible color values so as to lessen the memory requirements for the LUT, and intermediate values in the LUT are obtained by linear interpolation (column 2/14-20). The primary advantage of such a practice is recognized by Kimura -- the saving of storage space.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu, can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000. Any inquiry of a general nature or relating to the status of this application or proceeding can also be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.



Colin M. LaRose
Group Art Unit 2624
26 July 2006